

# *The Feasibility, Constructability, and Efficacy of Tire-Derived Aggregate as a Component in Slurry Cutoff Walls*

*Produced under contract by:  
CSU, Chico Research Foundation*



*June 2006*

## **Appendix D**

### **Daily Construction Reports**

## DAILY CONSTRUCTION REPORT

Date: June 12, 1999

Weather: Sunny, Hot – Approx 90 Degrees

### CONTRACTORS LABOR FORCE:

Superintendent  
Motor Grader Operator  
Laborer (1)

### CONTRACTORS ON-SITE EQUIPMENT:

Caterpillar 14E Motor Grader (Operated approximately 7 hours)  
Caterpillar IT 28 Integrated Tool Carrier (Not used)

### SUMMARY OF CONTRACTOR WORK:

1. Contractor arrived on-site at 0830.
2. Morning work included:
  - cut-off monitoring wells and cap
  - install "road closed" and "road closed ahead" signage
  - begin grading of levee using Caterpillar 14E motor grader
  - grade toe of levee
3. Afternoon work included:
  - continuation of grading
  - build ramps at north and south ends for chip trucks
4. Superintendent and Laborer left the site at 1515. The grader operator continued to work until 16:30. Elevation of Levee cut down approximately 14 inches.

### OTHER NOTES:

1. DWR representatives Robert L. Duffey, Inspector and Robert W. Teal, Engineering Associate arrived at the site at approximately 0845. Mr. Teal expressed concern regarding dust control and asked about a water truck. I suggested that we try to limit vehicle speed. We agreed to watch the dust problem to see if it was going to be a problem.
2. After the grader removed the road base from the levee, there was no significant dust problem. The grader was working in damp clay soil with no visible dust.
3. The DWR employees were onsite for approximately one hour in the morning and then left. They came back after lunch and were onsite for less than 30 minutes.
4. Ground water elevation data was obtained in three locations for future monitoring. The first location was in the monitoring well along the toe of the levee near the burn pile. The water level was located 4 feet below the top of the cutoff pipe. This monitoring well was capped and buried. A second monitoring well in the swamp area was tagged with pink survey tape. The location of the ground water was 22 inches below the top of the pipe that corresponds with the surface of the earth. A third location further east in the swamp area was flagged with pink tape. Standing water was found in this area. A survey stake was placed such that the top of stake was at the same elevation of the water surface.

Prepared By: Richard G. Holman

Date: June 12, 2005



**View of Modified Levee Looking North**



**View of Modified Levee Looking South**





**View of Truck Ramp Looking North**



**Cat 14E Motor Grader, Bentonite, and IT 29**

# DAILY CONSTRUCTION REPORT

Date: Monday, June 14, 1999

Weather: Sunny, Hot – Approx 90 Degrees

## CONTRACTORS LABOR FORCE:

Superintendent, Engineer (Approximately 1 hour each)  
Laborer (2) - sporadically

## CONTRACTORS ON-SITE EQUIPMENT:

Caterpillar 14E Motor Grader (Not used)  
Caterpillar IT 28 Integrated Tool Carrier (used to offload 2 trucks bentonite)  
Additional Equipment delivered to site (see below – not used)

## SUMMARY OF CONTRACTOR WORK:

1. Contractor arrived on-site at 0715.
2. Morning work included:
  - Delivery of 2 truckloads of Bentonite
  - Peekema cut down walnut tree along toe of levee
  - Delivery of Caterpillar Generator
3. Afternoon work included:
  - Delivery of:
    - backfill mixing tank
    - Baker tank for bentonite slurry mixing
    - excavation bucket
    - fence panels for covering open excavation
    - slurry pumps, power panel, and pipe
    - Caterpillar 320L track mounted excavator
4. All Inquip employees were on site sporadically. Numerous trips were made to Marysville to coordinate the delivery of their equipment.

## OTHER NOTES:

1. The gate at Evans Reimer was locked this morning. There are two locks on the gate. One lock is owned by the local landowner and the other lock is owned by DWR. I called Mr. Teal of DWR and also paged him. I received no response. The gate was cut open and repaired. I made two copies of the local landowners key. I gave one copy to Inquip and kept one for myself.
2. I spoke with Karen Barstow of Golden By-Products. I requested one truckload of tires (24 tons) on Thursday between 1000 and 1200. I also requested three truckloads on Friday at 1000, 1400, and 1600. I told her that I would call her Thursday afternoon to confirm the Friday deliveries. She expressed that she would prefer to not work on Sunday however if the contractor needed deliveries, she would meet their requirements.
3. I met with Doak Cotter from the Water District. He confirmed that using levee water was acceptable.
4. At 1700, I received a call from Inquip (JP). They have changed to an 18" wide bucket. This will lessen their required quantity of tires from 530 tons down to 385 tons. He said that each 24 ton truckload would be approximately 7.3, 18 cubic yard batches. He thought that each batch would take approximately 20 minutes to mix and place.
5. Ordered a construction office trailer and a project sign.

Prepared By: Richard G. Holman

Date: 14-Jun-99





**Baker mixing tank for bentonite slurry**



**Walnut tree removal by Peekema**



**Cat 320L Excavator for backfill**



**IT 28 offloading bentonite**

# **DAILY CONSTRUCTION REPORT**

Date: Tuesday, June 15, 1999

Weather: Sunny, Hot – Approx 90 Degrees

## **CONTRACTORS LABOR FORCE:**

Superintendent, Engineer (Approximately 1 hour each)  
Craft Labor (6)

## **CONTRACTORS ON-SITE EQUIPMENT:**

Caterpillar 14E Motor Grader (Not used)  
Caterpillar IT 28 Integrated Tool Carrier (used to offload 2 trucks bentonite)  
2 Baker Slurry mixing tanks  
Slurry mixing pump and panel  
Caterpillar Generator  
Caterpillar 320L track mounted excavator  
HDPE pipe fusing equipment

## **SUMMARY OF CONTRACTOR WORK:**

1. Contractor arrived on-site at 0715.
2. Morning work included:
  - Delivery of 1 truckload of Cement
  - Arrange slurry mixing equipment/generator
  - Built Forms for backfill visual inspection test
3. Afternoon work included:
  - Assembly (fusing) of HDPE slurry pipe (approx. 40 feet every 5.5 minutes)
  - Assembly of water supply pipe
  - Crews worked until 1830
  - Piping of slurry mixing tank/pumps for re-circulation
  - Delivery of Lignosulfate retarder for backfill

## **OTHER NOTES:**

1. I called Mr. Teal with DWR to confirm excavation scheduled for Thursday. I also informed him that minor excavation was occurring to place the water supply line. He said that he should be on site around noon on Thursday, June 17, 1999.
2. One of the road closed signs was missing this morning. I asked the lead laborer to ensure that the road closure was clearly marked at the end of the day.
3. I partially assembled the backfill inspection test forms.
4. I expressed to Dennis Thompson (superintendent) that I was concerned about the truck ramps. He said he would work on them on Wednesday.
5. JP (Inquip Engineer) asked about the base plate for the slump test. Apparently they can't locate one. I told him we would bring a clean metal tray from our concrete laboratory.
6. All personnel were wearing vests and hardhats. This is something that we need to watch.





**Backfill Visual Inspection Test Forms**



**HDPE pipe fusing equipment**





**Slurry Mixing Tanks, Pump, and Control Panel**



**Integrated Tool Carrier dragging HDPE slurry pipe**



# DAILY CONSTRUCTION REPORT

Date: Wednesday, June 16, 1999

Weather: Sunny, Hot – Approx 90 Degrees

## CONTRACTORS LABOR FORCE:

Superintendent, Engineer (Approximately 3 hours each)

Craft Labor (6)

## CONTRACTORS ON-SITE EQUIPMENT:

Caterpillar 14E Motor Grader (Not used)

Caterpillar IT 28 Integrated Tool Carrier (used to offload 2 trucks bentonite)

2 Baker Slurry mixing tanks

Slurry mixing pump and panel

Caterpillar Generator

Caterpillar 320L track mounted excavator

HDPE pipe fusing equipment

Additional Deliveries (see below)

## SUMMARY OF CONTRACTOR WORK:

1. Morning work included:
  - Delivery of 1 truckload of Cement
  - Mix one batch of bentonite slurry in Baker tanks
  - Delivery of Caterpillar 235C track mounted excavator
  - Delivery of Caterpillar 953 track mounted front end loader
  - Diesel pump delivered and connected – operational
2. Afternoon work included:
  - Completion of fusing HDPE slurry pipe – complete by 1700
  - Mixing second batch of bentonite slurry

## OTHER NOTES:

1. Bentonite not mixing very well with water. Soda ash added to soften the water.
2. Re-confirmed specification requirement that mix design may need to be modified after first batch. Spoke with both Dennis and JP. JP concerned about W-C ratio.
3. Cat 235C excavator was delivered and had experienced some damage to the cab. Equipment was rented from Jaeger. Jaeger visited the site and confirmed damage. Equipment is operational.
4. Ground water elevation was down 4" today. I requested watering records for the landowner across the canal. Left message.
5. Levee is now approximately 21 feet wide. The plan for the backfill operation is to put the Cat 320L on one side of the excavation and the mixing box on the other side of the excavation. Track width of 320L = 10'-5", Trench = 1.5', Mixing Box = 7'-9". Total width = 19'-8". Only 1'-4" extra room.
6. Plan is to spend the morning of June 17, 1999 changing the stick and bucket on the Cat 235D and beginning excavation around noon. First delivery of tire chips is scheduled for 1000. Karen Barstow has expressed a desire to not work on Sunday, June 20 (Fathers Day). Dennis Thompson of Inquip expressed that this decision will be made based on progress achieved.

Prepared By: Richard G. Holman

Date: 16-Jun-99



**Loading Bentonite Mixing Tank**



**Diesel Water Supply Pump**





**Cat 953 Track Mounted Front End Loader**



**Backfill Mixing Tank**



# DAILY CONSTRUCTION REPORT

Date: Thursday, June 17, 1999

Weather: Sunny, Hot – Approx 90 Degrees

## NOTES:

1. Contractor working on Equipment until approximately 1630.
2. Excavation started at 1630.
3. Mixed two batches of backfill. Slump approximately 5.5 inches after adding additional soil. Second batch started with less slurry due to moisture content in soil from bentonite.
4. Made two compressive strength cylinders and one permeability cylinder.
5. Roger Formanek of CIWMB on-site
6. Picked up project sign.
7. Contractor worked 0700-2030



**Dragging Mixing Bucket to Excavation Area**



**First Delivery of Tire Chips**



**Dumping First Load of Tire Chips**



**First Bucket of Excavation**



**Bentonite Slurry**





**Excavation of Trench**



**Addition of Rubber Tires to Backfill**

# DAILY CONSTRUCTION REPORT

Date: Friday, June 18, 1999

Weather: Sunny, Hot – Approx 95 Degrees

## CONTRACTORS LABOR FORCE:

Superintendent, Engineer  
Craft Labor (8)

## CONTRACTORS ON-SITE EQUIPMENT:

Caterpillar 14E Motor Grader (Not used)  
Caterpillar IT 28 Integrated Tool Carrier  
2 Baker Slurry mixing tanks  
Slurry mixing pump and panel  
Caterpillar Generator  
Caterpillar 320L track mounted excavator  
HDPE pipe fusing equipment  
Caterpillar 235C track mounted excavator  
Caterpillar 953 track mounted front end loader  
Diesel pump – Not being used

## SUMMARY OF CONTRACTOR WORK:

1. Morning work included:
  - Cat 235 Excavating Trench
  - Mixed six batches of backfill
  - Continued mixing bentonite
  - Slump averaging 4-6"
  - Trailer Delivered to site
2. Afternoon work included:
  - Mixed two batches of backfill – stopped backfill; catching up to excavator
  - Made one cylinder for compressive strength and one for permeability

## OTHER NOTES:

1. Received three truckloads of chips. Had problems with the first driver complaining about the access road to his dispatcher. Lynn of Sukut Construction came over from Oroville and found a better access road. Next two drivers had no problems.
2. Jim Barstow of Golden Byproducts visited the site in the afternoon.
3. Fencing was not placed over the excavation last night. It was placed at the end of today's shift.
4. Water elevation of monitoring well has dropped one inch since Wednesday.
5. At the end of the shift, the backfill station is at 01+20 and the excavation station is at 02+70. (150 feet between backfill and excavator).
6. Worked 14 hours today. I would estimate that the contractor excavated three hours yesterday and eleven hours today. The total distance of excavation excluding the lead-in is 270 feet. This is an average of 20 feet per hour. At this rate, the excavation would be complete in 57 working hours.

Prepared By: Richard G. Holman

Date: 18-Jun-99





**Excavation and Backfill Operation**



**Excavator at 27' of depth**





**Mixing backfill – Cement Hopper, Tires, and Soil**



**5.5 Inches of Slump**

# DAILY CONSTRUCTION REPORT

Date: Saturday, June 19, 1999

Weather: Sunny, Hot – Approx 90 Degrees

## CONTRACTORS LABOR FORCE:

Superintendent, Engineer  
Craft Labor (8)

## CONTRACTORS ON-SITE EQUIPMENT:

Caterpillar 14E Motor Grader (Not used)  
Caterpillar IT 28 Integrated Tool Carrier (2)  
2 Baker Slurry mixing tanks  
Slurry mixing pump and panel  
Water supply pump  
Caterpillar Generator  
Caterpillar 320L track mounted excavator  
HDPE pipe fusing equipment  
Caterpillar 235C track mounted excavator  
Caterpillar 953 track mounted front end loader

## SUMMARY OF CONTRACTOR WORK:

1. Morning work included:
  - Did not start excavating until 0840. Had problems with bushing near bucket on excavator. Dennis Thompson drove into Sacramento to pick up a replacement and a spare.
  - Project Sign erected.
  - Excavation and backfill continued
2. Afternoon work included:
  - Continued excavation and backfill
  - Took samples – 4" slump
  - Inquip still having problems with slurry plant. May stop backfill early to work on the plant.

## OTHER NOTES:

1. Received two truckloads of chips.
2. Paul Russell of Sutter-Butte Water District visited the site. He was very pleased with the progress of the project.
3. Fencing was placed over the excavation last night.
4. I reminded Dennis Thompson that once the backfill passes the clearing in the orchard, he would need to consider a different truck delivery routing. He said that he may just have the trucks back up to the levee and dump their load. He would then tram the chips to the mixing bucket.
5. Water elevation of monitoring well is 5" below grade. (no change)
6. Received new (rebuilt) teeth for the excavator. New teeth are expected by Monday.
7. Excavation continues to be moving at about 20 feet per hour.
8. Worked 12 hours. Contractor not working on Sunday.

Prepared By: Richard G. Holman

Date: 19-Jun-99





**Bushing Repair on 235 Excavator**



**Excavator Repair**





**Project Sign**



**Project Sign**

# DAILY CONSTRUCTION REPORT

Date: Monday, June 21, 1999

Weather: Sunny, Hot – Approx 90 Degrees

## CONTRACTORS LABOR FORCE:

Superintendent, Engineer  
Craft Labor (8)

## CONTRACTORS ON-SITE EQUIPMENT:

Caterpillar 14E Motor Grader (Not used)  
Caterpillar IT 28 Integrated Tool Carrier (2)  
2 Baker Slurry mixing tanks  
Slurry mixing pump and panel  
Water supply pump  
Caterpillar Generator  
Caterpillar 320L track mounted excavator  
HDPE pipe fusing equipment  
Caterpillar 235C track mounted excavator  
Caterpillar 953 track mounted front end loader

## SUMMARY OF CONTRACTOR WORK:

1. Morning work included:
  - Excavation and backfill continued
2. Afternoon work included:
  - Continued excavation and backfill
  - Took samples – 5.5" slump

## OTHER NOTES:

1. Received two truckloads of chips.
2. Lynn and Gail from the Oroville site visited the project. They suggested that we take four loads of tires on Tuesday and four loads on Wednesday to allow them to clean up their site. I spoke with Dennis Thompson and he agreed. I called Karen at Golden By-Products. We will have trucks at 0700, 1000, 1300, and 1600 on both Tuesday and Wednesday.
3. Water elevation of monitoring well is 5" below grade. (no change) The landowner across the canal has begun watering. We will need to keep an eye on the monitoring well.
4. The project experienced a significant increase in progress today. 260 lineal feet of backfill was placed. The excavator is approximately 150 feet ahead of the backfill crew.
5. Worked 12 hours.
6. Had press conference at 1100.
7. Aerial photographs taken at 1100.
8. No progress photographs taken today.
9. Three test cylinders taken today. Vector to deliver a fresh set of cylinders tomorrow afternoon.

Prepared By: Richard G. Holman

Date: 19-Jun-99



## DAILY CONSTRUCTION REPORT

Date: Wednesday, June 23, 1999

Weather: Sunny, Hot – Approx 95 Degrees

### CONTRACTORS LABOR FORCE:

Superintendent, Engineer  
Craft Labor (6)

### CONTRACTORS ON-SITE EQUIPMENT:

Caterpillar 14E Motor Grader (Not used)  
Caterpillar IT 28 Integrated Tool Carrier (2)  
2 Baker Slurry mixing tanks  
Slurry mixing pump and panel  
Water supply pump  
Caterpillar Generator  
Caterpillar 320L track mounted excavator  
HDPE pipe fusing equipment  
Caterpillar 235C track mounted excavator  
Caterpillar 953 track mounted front end loader

### SUMMARY OF CONTRACTOR WORK:

1. Morning work included:
  - Excavation and backfill continued
2. Afternoon work included:
  - Continued excavation and backfill

### OTHER NOTES:

1. High ranking visitors from DWR on site.
2. Four loads of tires delivered.
3. Water elevation of monitoring well is 8" below grade. Landowner across the canal has continued to water his crops.
4. The excavator is at station 11+10 – only 290 more feet to excavate – excavated 200 feet today.
5. Backfill is 74% complete. 17% percent of the backfill was placed today.
6. Spoke with Dave Ricketts of USCOE today. He may visit the site on Friday morning. He will call me tomorrow afternoon to confirm that the contractor has not finished.
7. Contractor worked 12 hours.
8. Three test cylinders taken today. – two for compression and one for permeability.
9. Contacted Von Geldern Engineering regarding compaction testing of the levee road. We will use DWR specifications which are slightly different from USCOE specifications. A representative of Von Geldern will contact me at the site in the morning to prepare the maximum dry density curve.
10. The cutoff wall should be complete by Friday. Saturday work will include general site grading and site cleanup including dismantling of the bentonite plant. The contractor will not work Sunday. Levee roadway reconstruction is scheduled to start on Monday, June 28, 1999.
11. Today's progress photos include an overview of the mixing process.

Prepared By: Richard G. Holman

Date: 23-Jun-99





**Step 3: Rubber tires added after cement-bentonite thoroughly mixed**



**Step 4: Soil Added to obtain slump**





**Step 1: Excavator Adds Bentonite from Trench into Mixing Bowl**



**Step 2: Cement hopper adds cement via trap door in bottom**



# **DAILY CONSTRUCTION REPORT**

Date: Wednesday, June 24, 1999

Weather: Sunny, Hot – Approx 85 Degrees

## **CONTRACTORS LABOR FORCE:**

Superintendent, Engineer  
Craft Labor (6)

## **CONTRACTORS ON-SITE EQUIPMENT:**

Caterpillar 14E Motor Grader (Not used)  
Caterpillar IT 28 Integrated Tool Carrier (2)  
2 Baker Slurry mixing tanks  
Slurry mixing pump and panel  
Water supply pump  
Caterpillar Generator  
Caterpillar 320L track mounted excavator  
HDPE pipe fusing equipment  
Caterpillar 235C track mounted excavator  
Caterpillar 953 track mounted front end loader

## **SUMMARY OF CONTRACTOR WORK:**

1. Morning work included:
  - Excavation and backfill continued
2. Afternoon work included:
  - Continued excavation and backfill
  - Cleanup of rubber and waste soil along toe of levee

## **OTHER NOTES:**

1. Two visitors from USCOE – Mike Ransbotham and Ed Flynt.
2. Five loads of tires delivered – Tire deliveries complete
3. Water elevation of monitoring well is 8" below grade. Water elevation near farmhouse dropped two inches between 1400-1700 (3 Hours).
4. The excavator is at station 13+45 – only 51 more feet to excavate. Backfill daylight is at 12+70.
5. Backfill is 93% complete. 19% percent of the backfill was placed today.
6. Contractor worked 12 hours.
7. Three test cylinders taken today. – two for compression and one for permeability.
8. Working on compaction requirements for levee road. Bob Teal contacted me and stated that rubber tire chips were not acceptable in the floodway. Preparing a proposed plan to accommodate his requirement.
9. The cutoff wall should be complete by Friday. Saturday work will include general site grading and site cleanup including dismantling of the bentonite plant. The contractor will not work Sunday. Levee roadway reconstruction is scheduled to start on Monday, June 28, 1999.
- 10.

Prepared By: Richard G. Holman

Date: 24-Jun-99





**Monitoring Stick – 2" water surface drop in 3 hours today**



# **DAILY CONSTRUCTION REPORT**

Date: Monday, July 12, 1999

Weather: Sunny, Hot – Approx 110 Degrees

## **CONTRACTORS LABOR FORCE:**

Anderson Dragline – First Day  
Darrel – Foreman/Motor Grader Operator  
Scraper Operator  
Water Truck Operator

## **CONTRACTORS ON-SITE EQUIPMENT:**

Caterpillar 163H Motor Grader (0700)  
Caterpillar 615 Self Loading Scraper (0700)  
Front End Loader (1400)  
Soil Screen (1500)

## **SUMMARY OF CONTRACTOR WORK:**

1. Contractor arrived on-site at 0630.
2. Morning work included:
  - Using Blade and Motor Grader return levee to original line and grade
3. Afternoon work included:
  - Scraper continued to work on moving earth into a stockpile for screening
  - Darrel coordinated equipment deliveries

## **OTHER NOTES:**

1. New DWR Inspector Mr. Steve Dawson onsite approximately 0645.
2. Mr. Dale L. Whitmore, Department of Fish and Game onsite at approximately 0700. I expressed that we would like to put all excess soil in the swamp area. He referred to this area as a wetland. I noted that this was not actually a wetland but an orchard that has been inundated due to seepage from the levee. Mr. Dawson noted that if any material is to be placed in the swamp, that DWR permission would be required, and that the material would need to be screened. I stated that we would either request an exemption to place the screened material in the swamp, or we would haul the material off-site but that this work did not need to be completed until November.
3. Contractor working on removal of soil/rubber from top, slope, and toe of levee.
4. Work may require final removal of rubber by hand or raking.
5. At approximately 1430, I received a call from the inspector informing me that a problem had developed at the north end of the slurry wall. He described it as a deep hole approximately 4-7 cubic yards in volume. I returned to the site to investigate. The hole was 6 feet deep approximately 2' x 2' in area (plan view). It appears that there is a connection between the hole and the canal. The hole was covered and safety signage was installed. Professor Bruce Yoakum P.E. arrived on site at approximately 1630 to investigate. Inspector Steve Dawson notified DWR management of the condition. A meeting will be held sometime around noon tomorrow to discuss potential resolution of this condition.
6. I called Inquip to inform them of the condition. Mr. Gene Hensgen, President, stated that if in fact the cause of the void was related to their work, that he would authorize Anderson Dragline to perform any necessary repairs and backcharge Inquip. I told him that I did not know the cause of the void. I told him that I would get back to him as the situation develops.

Prepared By: Richard G. Holman

Date: 12-Jul-99



**View of potential cause of void**  
**Note concrete patch in upper left-hand corner of photo**



**View looking down the void from the top of the levee**



# DAILY CONSTRUCTION REPORT

Date: Tuesday, July 13, 1999

Weather: Sunny, Hot – Approx 105 Degrees

## CONTRACTORS LABOR FORCE:

Darrel – Foreman/Motor Grader Operator  
Scraper Operator  
Water Truck Operator (partial day)

## CONTRACTORS ON-SITE EQUIPMENT:

Caterpillar 163H Motor Grader  
Caterpillar 615 Self Loading Scraper  
2 each Front End Loaders (second arrived approx. 1300)  
Soil Screen  
Motor Grader and Scraper were taken off rent according to Darrel

## SUMMARY OF CONTRACTOR WORK:

1. Contractor working 0700 – 1630.
2. Morning work included:
  - Approx. 2 hours with Blade & Motor Grader along toe and on top of levee
3. Afternoon work included:
  - Changed Screen to  $\frac{3}{4}$  inch – material acceptable to DWR (Karen and Steve)
  - Screening stockpile of soil – using two loaders. Material that is rejected from screen is worked to break down soil and then re-screened.

## OTHER NOTES:

1. At approximately 0815, a second void developed in the levee at station 13+75. A scraper was near the new void when it opened up. It appeared approximately seven feet deep and had a few inches of water in the bottom.
2. Spoke to Gene Hensgen of Inquip. I requested that if we were to do any excavation or exploratory testing, that he have a representative on-site. He agreed. Dennis Thompson will be back in town on July 20, 1999. Gene will be in Marysville from July 14-21.
3. Doak Cotter and the entire Board of Directors visited the site. They expressed the importance of continual flow of water in this peak watering season. He noted that starting September 1, 1999, flows might be reduced.
4. Bruce Yoakum on-site at 1200.
5. Roger Formanek and Martha Gildart on-site at approximately 1200.
6. Screening process started with 1" screens – material rejected by inspector. Guy Rents delivered  $\frac{3}{4}$ " screens – material accepted by Steve Dawson and Karen (maintenance).
7. Ricardo Pena and Victor from Sacramento DWR office onsite at 1300. They observed the situation and requested a proposal from CSU/CIWMB to resolve the problem. During this visit Professor Yoakum inserted a long piece of PVC pipe into the north void, it reached a depth of approximately 14 feet below grade.
8. One option discussed was to use a cone penetrometer to perform subsurface explorations with emphasis on searching for voids. I contacted Andy Taber of Taber Consultants. He noted that a cone penetrometer could perform 400-500 lf of exploration per day. He also noted that this would cost approximately \$5.50 to \$7.50 per foot depending on the data required.
9. Plywood covers were placed over the holes in the levee and caution tape was utilized.

Prepared By: Richard G. Holman

Date: 13-Jul-99



Location of holes – second hole located 19 feet south of the first



Screening Operation



**AUGUST 10, 1999**



**RUBBER RAKING CREW**



**TIRE CHIPS RECOVERED FROM TOP OF LEVEE**

**AUGUST 11, 1999**



**EXCAVATOR MOVING SCREENED FILL**



**LOADER MOVING SCREENED FILL**





**BELLY DUMP TRUCKS DELIVERING ADDITIONAL FILL**



**LASER LEVEL USED FOR GRADING**



**AUGUST 13, 1999**

**LEVEE ROAD OPEN TO TRAFFIC**



